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ABSTRACT

This newsletter theme issue on distance education serving individuals with disabilities considers historical developments, technology, staff training strategies, and staff training materials. It is noted that improving access to training for staff members can improve the quality of services for individuals with disabilities. The following articles are presented: "Distance Education: Training Service Providers in the Information Age" (Teri Wallace and Dick Weatherman); "Distance Education Technology: Past, Present, and Future" (Marvin Fifield); "Enhancing Quality and Access to Training through Distance Learning Technologies" (Larry D. Coyle); "Meeting Direct Service Training Challenges with ITV" (Amy Hewitt, et. al.); "Reaching across the Wilderness: Distance Education in Alaska" (Susan Ryan-Vincek); "New Pathways to a Degree at the College of St. Catherine" (Julie Bass Haugen and Mary Beth King); "Computer Assisted Training: What's Next on the Rehab Education Horizon?" (Karen Flippo); "Closing the Distance Gap" (Amy J. Armstrong); and "Multi-University Training: The 'Media Exchange Program'" (George J. Vesprani). In addition, descriptions are provided of the Paraprofessional Training Project which offers distance education via interactive television throughout Minnesota, University of San Francisco's Executive Master's degree program in Rehabilitation Administration, and a human services agency's computer-based in-house training vehicle called SCOUT. Also described are six training materials for use in distance education and 10 books and journal citations on distance education. Most articles contain references. (SW)

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Feature Issue on Distance Education. Impact.
Teri Wallace, Ed.
Dick Weatherman, Ed.

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IMPACT

INSTITUTE ON COMMUNITY INTEGRATION
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
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Feature Issue on Distance Education **Volume 8 (2) Spring 1995**

Distance education offers service providers in the developmental disabilities field, such as these paraprofessionals, more options for access to quality, up-to-date training.

From the Editors

CD-ROMs. E-mail. Interactive television. Satellite videoconferences. Computer-mediated communication. Download, downlink, uplink, real-time, online.... There's a new language used in today's discussions of training and education. It's the language of the latest communications technologies. It seems that the terminology, and the products and approaches it refers to, change far too quickly for anyone but the most devoted technophiles to keep pace. And for those with the responsibility for training personnel in the developmental disabilities field, there are other more important words to attend to, such as *quality, community, consumer-driven,* and *self-determination.*

However, in pursuing the goal of quality, consumer-driven services that support the community integration and self-determination of individuals with developmental disabilities, we believe it is important to consider how new technologies can facilitate reaching that goal. It is not necessary for educational institutions and service agencies to try to keep pace with each shift in technological fashions. We believe it *is* important that those responsible for staff training keep foremost in their minds the audiences and desired outcomes for training. Then, with those in mind, to consider the array of possible tools for attaining those outcomes with those audiences. Some of those tools may be the technologies presented in this issue of *IMPACT.*

Distance Education: Training Service Providers in the Information Age

by Teri Wallace and Dick Weatherman

Changes in attitudes, values, legislation, and public policy over the past two decades have led to rapid expansion of community and educational services for individuals with disabilities and their families. The locus of residential services has shifted from institutions to small community living arrangements. Educational services have shifted from segregated services to models that facilitate the inclusion of all children in neighborhood schools and regular classrooms. Adult day services are moving from a skill development model to providing supports needed to enable people to work in community jobs. As more community residential, educational, and vocational opportunities have been created, the training needs of staff currently employed by or preparing for jobs in these programs have increased in scope and complexity, and the lack of training has become more visible. Community agencies and schools are experiencing increased pressure to hire, train, and retrain staff members who understand the purpose and nature of contemporary services, and who are equipped to provide effective, quality services to individuals with disabilities.

Many post-secondary institutions have research, service, community outreach, inservice training, and preservice training as key activities

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Distance Education Technology: Past, Present, and Future

by Marvin Fifield

The purpose of distance education is to make learning opportunities equally available to everyone. This challenge was, perhaps, first addressed by correspondence courses and self-instructional programs utilizing the technology of the postal service as the delivery vehicle. Today, distance education is usually associated with broadcast communication systems and emphasis is primarily on transmitting classroom learning to groups of people at distant sites.

■ Historical Highlights

Historically, distance learning has been closely connected with advances in instructional and information technology. Some of the key developments in its evolution have been the following:

- **Instructional Technology**. This was initially concerned with audio-visual equipment and materials. As this movement developed, interest turned toward the design and validation of learning systems addressing such things as up-front analysis, needs assessment, task analysis, hierarchies, learning outcomes, instructional techniques, learner styles, and cognitive processes. From this movement, individualized and auto-tutorial instruction emerged, as did the concepts of mastery learning and domain-referenced assessment.
- **Information Technology**. *Information technology* refers to the development and utilization of devices and systems for communicating information. These may range from smoke signals to cyberspace and include individualized systems such as telephones and computers, as well as mass media systems such as broadcast television and radio. The major advances in distance learning have been primarily the result of linking distance learning technology with individual learning systems.
- **Teaching Machines**. Perhaps the first attempt at applying the principles of instruction through technology resulted in the development of teaching machines. Using a programmed learning format, a technical device was designed that would present the desired training sequentially and provide for active-learner participation. The self-pacing format is one of the major advantages of auto-tutorial learning. Training programs on computer disks and CD-ROMs are today's application of teaching machines.
- **Cassette-Based Training**. Audio wire and tape recorders, followed by cassette tapes and then videocassettes, have provided many opportunities for packaging and structuring learning for various intended audiences. This technology provides almost unlimited opportunity. Commercial interests are currently exploiting this with "books on tape", videocassette cookbooks, and home repair manuals. Cassette-packaged training, however, has been limited by its inability to selectively retrieve information quickly and to facilitate editing and arranging of learning sequences.
- **Videodisc Technology**. The videodisc made fast information retrieval possible. When linked with computers to manage the program, learning segments could be accessed almost instantaneously. This brought together the advantages of instant access and the program flexibility of the computer. Videodiscs could be interactive, providing learning segments that could be re-sequenced and reprogrammed. This flexibility made it possible to utilize the basic principles of instructional technology leading to learning mastery using communications technology (Thorkildsen & Frieden, 1986).
- **Mass Media Technology**. The availability of radio and television, along with their low cost and portability, made them ideal media for distance learning. Unfortunately, commercial and entertainment interests, along with limited federal support for public-controlled programming, have limited their effectiveness in the United States. Like most technology, there are disadvantages as well as advantages. The major drawback of broadcast technology is its passive nature. Several attempts have been made to creatively engage learners in an interactive exchange. However, these have only been effective in selected learning areas.
- **Computers**. The impact of computers in education has been much like that of television. Some predicted revolutionary advances, others, its demise. It is probably safe to say that neither has occurred. However, computers, like television, have impacted education, distance learning, and individualized learning technology in unpredicted ways.
- **Distance Learning**. The widespread interest in distance learning today has come about as a result of the ability to link communications technology with instructional technology and to use a common digital format. Fiber optics and microwave systems have multiplied the number of channels available, thus reducing scheduling limitations. With advances in compressed video and multimedia

editing systems, increased flexibility and variety have been added and have become available at a much reduced cost. Today, multi-media technology brings together properties of several of the systems described above. When multi-media technology is used and packaged in CD-ROMs, it can be utilized as individual training programs or as "clips" or "view segments" in distance learning programs.

Perhaps the most exciting developments during the last few years have been cross-over procedures that change analog signals (used by videos) to digital signals (used by computers). Analog-to-digital conversion with compression provides information that can be instantly retrieved in a format where one can easily edit or store vast amounts of information effectively. Most importantly, compressed digital information can be transmitted through virtually all existing delivery formats. It can be broadcast via satellite, microwave, fiber optics, phone or cable or it can be distributed individually as CD-ROMs, videos or by other electronic teaching devices. With this technology and flexibility, the potential of distance learning is almost unlimited.

■ Distance Learning in the 1990s and Beyond

In 1992, with support from the Administration on Developmental Disabilities, the Utah University Affiliated Program conducted a study of the issues surrounding distance learning. We found a distance learning initiative in virtually every state we contacted. Millions of dollars were being invested in fiber optics, microwave systems, studio facilities, and linkage to the system. Each state was enthusiastic about what they were doing and optimistic about the future when another major component would be added. Two years later, we found that although progress had been made, they were still about two years away from realizing what was envisioned for the system. State-operated distance learning initiatives were often caught up in politics, and support and investment in the system waned with party changes. Control of components sometimes shifted, affecting access to studios, equipment, and desirable timeframes.

Distance learning has great appeal. Some are attracted by the technology; others by the romance of being on camera. Administrators may see it as an inexpensive way of reaching more people. However, three major factors are often overlooked in considering distance learning:

- Like the movie industry, the real expenses for distance learning will be the actors (teachers) and script writers, cutting and editing, and special effects. Most of the investments today in distance learning are spent on hardware. It focuses on the media rather than the message. Most states are assuming that if the hardware is in place, public or higher education will use the system. They assume that the classes and course work offered currently can be easily and inexpensively adapted to distance learning technology: "Build a system, and people will come." In very few instances has funding been set aside for instructors to develop truly dynamite courses in areas of high interest and demand. Quality programming requires investments up front and, often, heavy investments in the existing systems and the people who are going to be teaching such courses.
- The second crucial factor is the quality of learning sites. The learning site may be the home with a computer or a television, a conference room with a television, or an interactive classroom. With today's communications technology, most learning sites are classrooms where students are grouped around a television monitor with two-way audio via telephone. To keep the attention of any group of learners requires a good site monitor and careful planning and organization. The impersonal nature of distance learning must be balanced with a personalization of the instruction by the site monitor. The entertainment use of television and computers has conditioned us to expect technology to be entertaining and to capture and maintain our interest at a level far beyond that which we expect of the typical classroom. Learners using technology will not tolerate the downtime, repetition, and boredom that characterize most classroom instruction. When we also consider the amazing availability of the "off" button, distance learning presents very formidable challenges.
- The third factor often overlooked is that distance learning does not always require high technology. Interactive video at each site is often seen as the panacea for training, when a one-way video, either broadcast or videotaped, along with two-way voice conference has proven just as effective and much less expensive in both time and resources. If the purpose of the needed training is to provide knowledge or awareness, audio and video cassettes can be used very effectively. Depending upon the topic and good site monitoring, even interactive teaching can use simple technology (i.e., audio conferencing combined with faxes for assignments). Computer networks, the Internet, and bulletin boards are often overlooked or dismissed in favor of more sophisticated video systems. The creative use of low-cost technology is probably the greatest wasteland in the distance learning field today.

Training programs looking at distance learning as a vehicle to reach a more diverse and disbursed audience should carefully consider the level at which they are trying to teach: awareness, information for decision-making, skills or mastery. They should also study what is currently available and only resort to the more sophisticated systems when they are essential.

Much is being said today about the information superhighway and its capacity to link together opportunities for training. The term *information superhighway* is used to

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Enhancing Quality and Access to Training Through Distance Learning Technologies

by Larry D. Coyle

Not many years ago, the concept of distance learning conjured up a picture something like the following: It is about midnight. You finally got the kids off to bed after a full day's work. You are writing your correspondence course assignment at the kitchen table to send off in the morning mail. In three or four weeks you'll get the graded assignment back with a few comments from your instructor. Your odds of completing the course are slim.

Distance learning, in its simplest terms, is education or training where the learning resources and the learner are separated in time and/or space. But, with today's interactive technologies, that no longer necessarily means isolated learners. Technology-based distance learning has become an international phenomenon servicing the exploding demand for life-long learning and training. Students can spend time in small discussion groups or working on collaborative projects with their peers from Minnesota to Moscow via electronic communications. Instructors or guest resource people can interact with students from anywhere in the world. Electronic "office hours" with the instructor and access to reference materials can be available to the student at any time, from anywhere. In short, proponents say that distance education technologies are incredibly powerful tools that can help trainers and educators meet the demands of greater access to quality education and training for today's learners.

Thoughtful critics, however, characterize much of technology's use in education and training programs as "bolt-on" technology, that is, programs that do the same thing in the same way as before, but add-on or "bolt-on" technology enhancement. They say that the quality of a program is related to how well it meets learners' needs rather than whether or not it employs technology. Technology may increase access to a program, but it may also increase the cost of the endeavor... and today's economic realities demand cost control, if not cost reduction in training budgets.

As usual, there are elements of truth to both sides of the debate. Distance education technologies are powerful tools. But, the extent to which they increase quality, if at all, depends on how skillfully they are used to meet learner needs. Technology is costly, but enterprising educators are developing partnerships and learning new ways of doing business in order to contain costs while expanding learner access.

Educators and trainers considering distance education methods must carefully evaluate the available communication systems in order to make the best match with the needs of their specific learners, program objectives, and budget constraints. The three technologies discussed here are some of the more recent systems adopted for use in distance education: computer-mediated communication, interactive television, and satellite videoconferencing.

Computer-mediated communication (CMC) is one of the more recent technological systems used for distance education. Today, CMC is included in a wide range of educational applications ranging from K-12 classes to doctoral level seminars conducted at a distance. Until very recently, most CMC applications were text-only communications with students and instructor using their personal computers and modems to connect to a central host computer. Participants normally have 24-hour dial-up access to a host computer that supports computer conferencing, electronic mail, and electronic bulletin boards. Faster modems and high-speed access to the Internet now allow educators to add graphic images and even motion video communications to CMC systems.

Some of the advantages to CMC for adult education and training are:

- **Access to resource materials**. Training materials (syllabi, readings, lecture notes) can be accessed by the learner "online" at any time.
- **Learner-to-learner communication**. Learners can correspond as easily with each other as with the instructor, an important component to adult learning.
- **Anytime, anywhere communications**. The instructor or students can access the system from anywhere in the world via a telephone line at any time during the day or night, important attributes for busy working adults.

Limitations of CMC systems are the following:

- **Most systems are text-based only**. The newer software with graphic, audio, and video requires all participants to have access to powerful multimedia computers with high-speed modems or a direct connection to the Internet.
- **Computer proficiency and computer access required**. All learners and the instructor should have full-time access to a computer, modem, and communications software; they also need to know (or be taught) how to use them.

Interactive television (ITV) is the closest thing to a face-to-face meeting or classroom environment of any of today's distance education technology systems. Participants assemble at two or more specially equipped sites that allow the groups to both see and hear each other via a special television system. While actual layouts may vary, each room has cameras

and monitors (display screens) to provide video and microphones and speakers to provide audio. The most recent advance in ITV technology converts the television picture and sound into a digital (computer-like) signal. Then the amount of digital information is "compressed", that is, reduced so that it can be transmitted over digital telephone circuits, commonly called T1 lines. This advancement allows communications over much greater distances than before possible. Long distance carriers like AT&T or Sprint can now connect ITV rooms around the world.

Advantages of ITV include the following:

- **Simulates face-to-face learning**. ITV is designed for group learning situations much like a training meeting or a classroom. This requires less adaptation of teaching/learning methods than other distance learning systems.
- **Incorporates media**. Most ITV rooms are equipped to allow for overhead-like graphic materials. Many also allow for a variety of other support media - slides, videotape, computer graphics.

Some limitations of ITV are:

- **Simulates face-to-face learning**. This attribute may also be viewed as a limitation because the system does not free learners from assembling at specific sites and times.
- **High infrastructure costs**. Specialized technology, dedicated rooms, and high transmission costs require these systems to be underwritten by a broad-based consortium. Educational consortia, governmental funding, and public private partnerships are all being explored.

The satellite videoconference format is usually more "like television" than other distance education methods. The primary advantage of satellite communication is its tremendous reach to large audiences. The coverage area (footprint) of domestic satellites includes all of North America. Satellite videoconference participants typically gather at "downlink sites" (meeting facilities equipped to receive satellite programs). At these sites they view a live television image transmitted by satellite to a television monitor or large screen television. Typically, the video signal is one-way. It is transmitted from the "uplink site" (the television studio where the program and the broadcast signal originates). Once the signal has been uplinked (sent) to the satellite, it can be downlinked (received) by anyone with the right kind of satellite dish. The interactive part of videoconferencing is usually accomplished by audiences at downlink sites using a telephone to ask questions of the presenters. Questions from the downlink sites and answers from the presenters are heard by all sites via satellite.

Advantages of the satellite videoconference are:

- **Reaches large, widely dispersed audiences**. Once the program signal is uplinked, it can reach an unlimited number of sites over a wide area for no additional cost.
- **Satellite receiving equipment readily available**. County extension offices, schools, libraries, government centers, and conference centers are often equipped with satellite receiving equipment.

Limitations include the following:

- **High level of coordination needed**. Promotion, distribution of materials, and local site arrangements all demand a highly coordinated effort to be successful.
- **Careful time scheduling required**. A single program time for large numbers of people (often across time zones) requires careful time selection and much advance notice.
- **High cost**. Like ITV, the cost of using a television studio and renting transmission time on a satellite are prohibitive for a small program. However, partnerships or consortia can make this technology very cost-efficient.

So how do you decide which system or combination of systems is right for your needs? The first step is to forget about technology for the time being. Step back and evaluate how you currently conduct your training program. Where could the program be improved to better meet your objectives and those of your learners? Are some learners not being reached because of scheduling or distance barriers? Are there presenters and materials that are difficult to bring face-to-face with learners? Are your training programs essentially the same or very similar to others across the state or country? Secondly, explore what technology systems currently service your "territory." Are your county extension offices or schools equipped with satellite receiving equipment or ITV systems? Are they willing to negotiate for your use of the system? Thirdly, are you, your trainers, and learners equipped with computers and computer literate? What kind of access do you have to the Internet - direct, dial-up? Fourth, what "older" distance education technologies are available to you? Many successful distance education programs are based on bridged telephone communications and the U.S. mail. Clearly, the latest technology serves no purpose if it is inaccessible to users. Fifth, seek out experienced distance educators and learn the "tricks." While various forms of distance education have been with us for many years, educators are still learning how to make the best use of these newer technologies. Finally, and most importantly, don't lose sight of your educational and training objectives. Your choices should be based on educational criteria. Select technologies that help you meet your goals.

Technology-based distance education presents a great challenge to trainers, who will have to learn new skills and modes of delivery. But, those who master these new tools will help lead education and training into the next century.

Larry D. Coyle is Extension Educator and Associate Professor, University of Minnesota, Minneapolis. He may be reached at (612) 625-1952.

Meeting Direct Service Training Challenges with ITV

by Amy Hewitt, Susan O'Nell, Jean Ness, and Suzanne Dotson

The delivery of effective training to direct service providers working within the field of developmental disabilities has always been a challenge. Training a diverse group of workers with varying needs and sharply divergent schedules on a typically low budget was never an easy task. As service has changed from congregate settings in large facilities to smaller community facilities, the challenge has become increasingly difficult. Staff are more isolated than ever as they seek to meet the needs of individuals with developmental disabilities who are actively involved in the community through competitive employment, recreation, and home maintenance. Many of the most experienced trainers and best training resources are still centrally located in larger cities or in state institutions, making quality training opportunities unavailable to large numbers of direct service providers, particularly in rural regions. Fortunately, advances in technology have revolutionized training and now afford our industry the opportunity to deliver competency-based and cost-effective training through interactive television (ITV).

■ A Training Disparity

Comprehensive, competency-based, and cost-effective training for direct service providers working in the field of developmental disabilities has been directly linked to high quality services. However, service providers and advocacy groups report that although most state agencies are spending money on training, their budgets are not sufficient to support training for everyone who needs it. Unfortunately, the people who are in greatest need of receiving training are often the ones who receive the least (State Technical College Task Force Report on Educational Opportunities for Direct Service Providers, 1992). Reasons for this disparity are:

- State agencies that fund training are spending most of these dollars to train State employees.
- Training budgets in provider agencies are minimal and turnover rates for staff are high; thus most training is spent on basic orientation for new employees.
- Parents and self-advocates have not traditionally been seen as direct service providers and have not been included in the training process.
- Direct service providers are spread throughout urban and rural areas, while the majority of training activity occurs in metropolitan areas.
- Training is expensive. There are both direct costs (e.g., materials, instructor fees) and indirect costs (e.g., travel, wages for attendees and replacement staff, travel time).

This disparity had led to a number of attempts by provider agencies, state departments, and advocacy groups to develop creative strategies to address the situation.

■ One State's Approach

In 1991, the Minnesota State Legislature created an advisory State Technical College Task Force and called for a report on changes that were needed in preservice and continuing education programs for direct service providers. This report included many recommendations that directly relate to the dissemination of comprehensive, competency-based, and cost-effective training for direct service providers. Two of the recommendations were: 1) ensure that training is responsive to regional needs and accessible to anyone interested in attending, and 2) broaden the focus of training to make it accessible to existing community resources (e.g., parents, direct service providers). The delivery of competency-based training through the Minnesota Technical College ITV networks was identified as a viable means through which these recommendations could be realized.

The Minnesota Statewide Direct Service Training Initiative (MSDSTI) was established in 1993 to respond to the recommendations of the mandated State Technical College Task Force report. This project, funded by the Administration on Developmental Disabilities, Minnesota Legislature, and Minnesota Department of Human Services, was designed to promote collaboration for training within the field of developmental disabilities.

Within the first year of the project, two training sessions were held for direct service providers, consumers, and family members over the interactive training network, attracting participants statewide. The outcome of these sessions has, overall, been positive. Some problems did arise, as they will with any new technology. For instance, the instructor was located at the primary classroom site and occasionally technical difficulties arose at the other sites and were frustrating for all participants. But, despite problems, ITV has received a lot of positive feedback. It has provided the opportunity to reach three times as many participants in each session as non-broadcast training would have, and has also allowed direct service staff to network with each other. Participants have reported that the time saved in travel and chance to meet others has outweighed the disadvantages of not having an instructor in the room and of the technical difficulties.

The MSDSTI has also provided the opportunity for trainers to be trained on the use of ITV as a means of delivering training to personnel. The train-the-trainer sessions were facilitated by the technical colleges and were also held over the interactive network. Additionally, the ITV

network has been used to disseminate information to agencies by broadcasting teleconferences and linking providers for statewide meetings.

ITV is one of the exciting new technologies that can be used to improve access to training for direct service providers supporting persons with developmental disabilities. It also holds the promise of resulting in improved quality of service by building a well-trained, well-qualified workforce.

Amy Hewitt and Susan O'Nell are Project Coordinators with MSDSTI at the Institute on Community Integration, University of Minnesota, Minneapolis; and Jean Ness is Project Coordinator with MSDSTI at the Minnesota State Board of Technical Colleges, St. Paul. Suzanne Dotson is Grants Administrator with the Minnesota Governor's Council on Developmental Disabilities, St. Paul. For further information on the project contact Amy at (612) 625-1098.

* The term *direct service provider* is used in this article to refer to paraprofessionals, professionals, volunteers, and family members who provide direct care for individuals with developmental disabilities.

Reference: Nichols, M. (1993). *State technical college task force on educational opportunities for developmental disability service providers*. St. Paul: Minnesota Governor's Planning Council on Developmental Disabilities.

Tech College Training on ITV: The *Paraprofessional Training Project*

In 1993, the Paraprofessional Training Project began offering distance education via interactive television (ITV) to paraprofessionals throughout Minnesota. The intention behind the project is to help paraprofessionals develop the competencies they need to effectively serve children, youth, and adults with moderate to severe disabilities in regular education, special education, and community environments. The training project, which is funded by a U.S. Department of Education grant, is a collaborative effort of four educational bodies: The Educational/Community Careers program at Hutchinson Technical College, the Minnesota Department of Education, the Minnesota Board of Technical Colleges, and the Institute on Community Integration at the University of Minnesota. Also participating are local ITV systems across the state and the Mid-Minnesota Telecommunications Consortium (MidTeC), a consortium of seven technical colleges that leases fiber optic cable to deliver courses, seminars, and meetings via a full motion, two-way audio and video network.

The project's first ITV training for paraprofessionals was held in the 1993-94 school year and included eight sites. Enrollment at all sites was substantial, with the courses reaching approximately 485 participants. So far this year, 294 participants have received training through seven technical college sites.

The material presented is comprised of six training modules: *Transition - The Role of the Paraprofessional; Early Childhood - The Role of the Paraprofessional; Working with Individuals Who Physical Disabilities or Chronic Health Conditions; The Role of the Paraprofessional; Developing an Awareness of Disabilities – Basic Principles and Values;* and *Positive Behavior Strategies for Paraprofessionals*. Classes are scheduled for late afternoons, primarily to accommodate the majority of participants' work schedules and also because that time is available on the network.

The technology used is state-of-the-art. Each site is equipped with video monitors displaying that site and showing the students and instructors at the other participating sites. Interactive television rooms are equipped with cameras, VCRs, and provisions for slides or computer graphics as video selections for the instructor. The instructor is equipped with a microphone and all sites have additional microphones for the students to communicate with the instructor or fellow students. Full presence audio and video is an attractive feature of this system because students like the idea of seeing the instructor and other students at all times.

Results from student evaluations of the system have been very favorable regarding the use of the technology as well as the convenience of attending classes in or near the communities in which they work and live. Many requests have been received from paraprofessionals throughout the state about the distance learning opportunities available through the project.

Today, technical colleges and school districts vary widely in their technical capability to participate in distance education. As distance delivery technologies continue to develop and become available in more locations, the challenge in the disabilities field is to find a way to use these technologies to effectively meet staff training needs and thereby enhance the quality of services for people with disabilities.

Contributed by Jim Decker, Coordinator with the Mid-Minnesota Telecommunications Consortium Interactive Television Network, St. Cloud, and the staff of the Educational/Community Careers program at Hutchinson Technical College, Hutchinson, Minnesota. For further information on the training project, contact the Educational/Community Careers Program at (612) 587-3636.

Reaching Across the Wilderness: Distance Education in Alaska

by Susan Ryan-Vincek

"You'd discover scores of incongruities in a walk around Ambler, or any other village in the region. Satellite dishes next to cabins chinked with moss; racks of meat and drying animal skins by trim prefabricated houses; sled dogs and the latest high-tech snowmobiles, VCRs and outhouses; a tiny video arcade with a wood stove" (Jans, 1993).

These are words used to describe life in rural Alaska. Alaska is the largest state in the union, covering over one-half million square miles, an area one-fifth the size of the contiguous United States. Education and services for students are shaped by the geographical realities of a diverse landscape. Thus innovative methods that emphasize linkages and cooperation among service providers are necessary to maximize education for all children. In response to this need, the Regular Education Full Inclusion Project was developed to build the capacity of regular education teachers, teaching assistants, and other team members across rural and remote areas of Alaska to support the educational needs of students who experience severe disabilities in their classrooms, schools, and communities. The Alaskan focus of this project stresses rural and remote delivery of services and fosters a respect for, and celebration of, cultural diversity.

■ Project Overview

The Regular Education Full Inclusion Project was a three-year project funded by the U. S. Department of Education, Office of Special Education Projects. The purpose of this project was to develop training materials and implement inservice training. Materials were developed related to implementing inclusive education programs for Alaskan students living in rural and remote villages who experience disabilities. Faculty from both the Department of Special Education and the Teacher Education Departments at the University of Alaska-Anchorage collaborated with rural teachers, principals, and special education directors as well as itinerant specialists to develop four modules targeted to meet the unique needs of educators in Alaska. The resulting modules/courses were: *Supporting Inclusion Through Collaborative Teaching Teams; The Essential Partnerships Among Families, Communities, and Schools; Cooperative Learning and Inclusion;* and *Curriculum Modification and Instructional Adaptations for Inclusive Schools.*

A trainer-of-trainers model was used to build the capacity of educators across Alaska. Nine teams from across the state were selected to receive training as rural inclusion specialists. These nine teams received one year of training on the modules, as well as technical assistance from a statewide special education service agency. The following year these nine teams who had been trained as mentors/full inclusion specialists participated in their districts as full inclusion specialists as well as mentors for other teachers and assistants. During the second year of training an additional 50 teachers and other educational team members enrolled in the four courses/modules and supported the educational needs of students who experience disabilities in regular education classrooms and schools in rural Alaska. In all, 70 educators from across the state participated in this project.

■ Distance Delivery Technologies Used

There were several unique distance delivery methods used to ensure the success of this project. These delivery methods included audioconferencing, module training, project sharing, videotape feedback, technical assistance, telephoning and e-mail, and summer institutes. The following describes the project's experience with their use:

- **Audio Teleconferencing**. Audioconferencing was selected as a method of distance delivery for several specific reasons. First, audioconferencing was convenient and accessible by every district and individual involved. Second, it was flexible in that it could reach students spread across a large geographic area with the use of a simple telephone line. This delivery system was also interactive, allowing for dialog between students and instructors. Audioconferencing also eliminated personal travel, therefore decreasing costs and travel time. There were several barriers experienced in audioconferencing, including auditory interference (e.g., barking dogs heard in the background, etc.), and bad connections such as weather conditions that interferred with transmission.
- **Module Training**. Teachers and teaching assistants enrolled in four courses during the year in which they were participants in this project. They met weekly at their site location and discussed weekly readings, activities, and assignments. On many occasions, local teams viewed commercially-made videotapes and discussed applications to classrooms and schools in rural Alaska. Frequently, course participants worked on projects together such as designing cooperative learning lessons, developing a team conflict negotiation plan, practicing the strategy of creative problem solving, and providing feedback to each other related to instructional strategies or curricular adaptations.

Participants mailed written or videotape assignments to project instructors.

- **Site Material and Project Sharing**. Each of the nine participating districts purchased materials including commercially made videotapes on inclusion, textbooks, and journals for their site participants. The materials were used by both the mentors and the mentees in each district. The project provided the participants with individual copies of modules, copyrighted articles, and other necessary materials. The project participants shared projects and assignments between participants and across districts. Participants shared success stories and site strategies for facilitating inclusion on audioconferences and site to site telephone calls.
- **Videotape Feedback**. Participants produced videotapes of site projects including implementation of circle of friends, MAPS sessions, cooperative learning lessons, team conflict negotiation strategies, and team meeting management strategies. Project instructors provided participants with feedback regarding their projects.
- **Technical Assistance**. Technical assistance was provided to districts by the Special Education Service Agency, an agency providing itinerant services to rural Alaskan students who experience disabilities. Specialists from this agency provide training, modeling, and technical assistance to teams related to inclusion strategies.
- **Telephone Calls and E-mail**. Project staff contacted each site to discuss issues related to implementation of inclusive practices. Furthermore, some sites were connected via electronic mail, which allowed the teachers easy access to course instructors and other teachers.
- **Summer Institutes**. The Alaska Department of Education, Special Education and Supplemental Services, collaborated with the Regular Education Full Inclusion Project to provide transportation from the rural villages to Anchorage summer institutes. The Alaska Restructuring Institute, sponsored by the Department of Education each summer, included a strand on inclusion. Project teachers and team members attended the institutes as presenters as well as participants.

■ Benefits from the Project

"Top down" directives calling for change are usually unsuccessful. Other characteristics of failed reform efforts have included domination by outside consultants, packaged curriculum and materials, one-shot training for teachers, and over-ambitious projects. Recognizing these issues, the developers of the Regular Education Full Inclusion Project sought to support local Alaskan teachers and teams to be leaders in their schools and communities. To this end, the following activities occurred:

- Joint decision-making about the project activities occurred between the project staff and local participants.
- Changes were adapted to local needs.
- Teachers received training over a two-year period.
- Materials were developed locally.
- Changes were concrete and practical.

The values underlying this project included respect for individual interests and needs of teachers; the importance of building local support networks for teachers; recognition of local leadership; and the importance of interdependence and caring in the everyday life of rural Alaskan.

The key to this project was collaboration and teaming: supporting local teachers and teaching assistants, and linking individuals so that they can think, plan, problem solve, and provide support to one another on an ongoing basis. One of the unique features of this project was that teachers and teaching assistants from the same village participated in this project together. In this way, teachers supported teaching assistants in working through the university course materials and project modules. These teams met weekly for at least one hour to discuss readings, participate in joint module assignments, and together with the principals, parents, and other building educators reflected on improving learning outcomes for all students.

Supporting teachers from rural and remote villages to feel empowered and capable of making a difference in the lives of children who experience disabilities was a goal of the project. We are discovering many ways in which teachers have begun to make changes in their communities. The following are some of the strategies these teachers are using:

- Commitment to continually improving their teaching, classroom, school, and community.
- Balancing teaching and being a part of the community.
- Seeking teaming partnerships with other remote educators.
- Daring to "try something different."
- Encouraging their principals and other teachers to be a part of the change.

The approach to distance delivered training on inclusive practices described here required collaboration, local support networks, and effort. Long-term outcomes will reflect a commitment to inclusion, local support, and rural leadership.

Susan Ryan-Vincek is Assistant Professor of Special Education and Project Director of the Regular Education Full Inclusion Project, University of Alaska, Anchorage. For further information contact her at (907) 786-4854.

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New Pathways to a Degree at the College of St. Catherine

by Julie Bass Haugen and Mary Beth King

The College of St. Catherine, in St. Paul, Minnesota, has a long and distinguished tradition of educating women of diverse ages, backgrounds, and needs. The responsiveness of the college to the changing educational needs of women has taken several forms during its history, including development of a day program for traditional college-aged women, a Re-Entry Adult Program (REAP), and Weekend College.

The Occupational Therapy Department at the College of St. Catherine also has a long history (it's celebrating its 50th anniversary this year) of adapting to the changing needs of students. In 1984, the first Weekend College occupational therapy class was admitted, and in 1994 the department launched a Master of Arts program for both entry level and post-professional graduate students. The Weekend College and Master of Arts programs, in particular, attract students who are unable to attend a traditional weekday program. Graduates of the occupational therapy program go on to work with persons with disabilities, using activity in all its forms to assist the persons to develop their fullest potential.

While the Weekend College expands the options for obtaining an education to those whose weekday schedules offer little flexibility, there are still entire populations with time limitations, geographic constraints or physical disabilities - including many prospective occupational therapy students - who have no opportunity to experience college because they are place-bound. By bringing college courses to them through distance education, these barriers to accessing education are being removed. New and emerging communications technologies make possible this new approach to meeting the needs of students by extending the classroom to their homes, communities, and work environments.

■ The New Pathways Program

In 1991, the College of St. Catherine was one of seven colleges and universities across the country awarded a grant from the Annenberg/CPB Project to participate in a new initiative, "New Pathways to a Degree: Using Technology to Open the College." The purpose of the initiative was to "help colleges use technologies to develop academic programs that are accessible to a New Majority of learners," and to test the proposition "that college can offer a new kind of program, made possible by technologies, that is accessible, supportive, academically rich and rigorous" (The Annenberg/CPB Project, *New Pathways to a Degree* publication). There are four continuing goals of New Pathways: 1) Remove accessibility barriers to degree programs for women by bringing college courses to them, 2) provide a superior academic learning experience for students using a variety of interactive technologies in a distance learning format, 3) provide experience and teach skill development in a variety of educational media and learning approaches, and 4) provide students with the most appropriate technology for learning concepts and participating in educational experiences.

Since 1993, New Pathways has brought both liberal arts courses and courses in information management to students using both computer- and video-mediated delivery systems. With this effort, the college has become a national leader in using technology to reach students in remote locations. The main components of the course delivery system are programs such as Hypercard, Toolbook, e-mail, and computer conferencing. Off-campus students use personal computers to link to the college and other networks.

Experienced educational technologists have duplicated and transformed traditional classroom lectures to computer software and other telecommunication technologies creating a "virtual" classroom. Each course is specially adapted for distance learners with the appropriate translating technology. These "translators" includeHypertext for lesson directions, lecture notes and syllabi; electronic mail and computer conferencing for class discussions, small group work, and questions; and films and videos of lectures or demonstrations used as sub-texts. In addition, local, national, and international library catalogs are accessed by computer and research is downloaded; the Internet, Dialog, America On-Line and other networks provide forums for discussion and learning with others throughout the world; exams are administered by electronic mail; and evaluation and assistance are given by bulletin board and VAX notes conferencing.

■ Student Response

The New Pathways program has been tremendously successful for both students and faculty. Students benefit from the exceptional quality of the course material and appreciate the expanded interaction with each other and their instructors unavailable in a classroom lecture format. They appreciate the flexibility and convenience of the program and working at their own pace within a class structure.

Lisa is a prospective Occupational Therapy major from a rural Minnesota community. She and her husband manage a 290-acre dairy farm and she also has a part-time job. "This program has opened up a whole new world for me. If it weren't for New Pathways, I wouldn't be able to get my education at all. This program is so stress free. I learn better when I'm ready to concentrate. When I sit at the computer I know I'm in the right frame of mind to get the most out of my education. And I feel connected to students even though I'm physically far away."

New Pathways, continued on page 18

The World is the Classroom: University of San Francisco's EMRA Program

An e-mail arrives today from a fellow student in New Orleans, reminding me that I need to finish my part of our team project. She'll download the portion that's already completed for me to review. And so tonight, after a full day spent managing a dynamic program for people with disabilities, I'll go home and work on an economics project. A typical day in the life of this long-distance learner.

I am a student at the University of San Francisco (USF), which offers a unique program for managers in rehabilitation who want to complete their Master's degree. The program, Executive Master's in Rehabilitation Administration (EMRA), is structured in such a way that it is accessible to people from throughout the United States and the world through distance education technology.

An e-mail arrives today from a fellow student in New Orleans, reminding me that I need to finish my part of our team project.... A typical day in the life of this long-distance learner.

The degree is designed to impact the EMRA graduate's leadership role in improving the economic and social conditions of people with disabilities. The program is based on a unique combination of six, eight-day campus sessions held over a two-year period, with time between sessions for on-the-job application of learning. This allows working managers in disability-related services to stay employed in their current jobs and communities and earn an accredited business school degree in 24 months.

The curriculum is varied and offers MBA-level courses in strategic and quality management, organizational behavior, marketing, human resources, managerial data-based problem solving, communications, and information and technology systems. In addition, contemporary disability courses covering world view of disability, systems management, applied rehabilitation economics and finance, and legislation and government are taught by the EMRA program administrators as well as adjunct faculty with national and global expertise. General management from a disability-driven perspective is a central theme that cuts across the program and is reflected in each course. This includes leadership, ethics, creative problem-solving, communication, and a global/cross-cultural perspective.

The program also includes a final organizational and systems change project reflecting significant individual study and growth in one's organization. Because we begin work on our project almost immediately during the coursework, we benefit from the work each of our colleagues is doing, learning about their research, goals of their projects, and ways to share information.

Upon entering the program, I thought I would benefit most from the coursework, which is challenging and relevant to me as a manager. However, I have found that the most cherished benefits have been the people I have met as colleagues in the class, and the faculty of the program, who are dedicated to making this method of learning work. I am fortunate to have a very diverse group of individuals with me in this journey. In addition to the diversity added due to geographic differences, several people in my class have disabilities themselves and are leaders in the movement to bring disability rights issues into the mainstream. I have learned much from the perspective they each give the program. In addition, because we are from throughout the United States and Canada, the process is enhanced with many opportunities to hear how different states and countries may view disability issues.

The adjunct faculty and others who come in to assist in classes are current leaders in the field of rehabilitation. The information they bring to the course is cutting-edge and enhances our understanding of best-practices within the industry. Last session we had an address by the executive director of disability services in the Czech Republic, Jaroslav Hruby. Hruby is also a Fulbright Fellow at Gallaudet University in Washington, D.C. His presentation discussed disability issues in the Czech Republic and how their system of services is designed. Gaining a world-view perspective really bridges the gap between cultures and challenges the students to think about cross-cultural issues.

In addition to distance learning through class sessions, the program's design promotes the use of technology between sessions for active learning through electronic mail, conference calls, fax, and U.S. mail. As a student in the program, it has been imperative that I learn to navigate many areas of the information highway.

Participating in the program I have built a new network of peers throughout the United States and in other countries. I feel very fortunate to participate in the program and its value to me as a manager is significant.

Contributed by Lynn Noren, Chief Operating Office at Rise, Inc., a rehabilitation facility in Spring Lake Park, Minnesota. For information on the EMRA program at the University of San Francisco, contact Richard Culp Robinson or Jeanette Harvey at (415) 666-2536.

Computer Assisted Training: What's Next on the Rehab Education Horizon?

by Karen Flippo

Educators are faced with two challenges when teaching adults: delivering content and designing a process that will convey the content respectfully to the audience. Adults learn better when they perceive that the information they receive will have immediate impact upon them. Therefore, the rehabilitation educator has to present ideas that are current, relevant, and applicable to each person receiving instruction. Since adults can easily feel threatened in an educational setting, the educator must concentrate on building upon the experiences and talents that the students already have, and weave these through the educational process. Many adults learn best through experiencing a task or practice. The trainer must incorporate a variety of strategies such as role plays, case studies, and games as a means to simulate experience. While these approaches are useful, they take valuable time away from delivering pure content. Yet, a skilled adult educator never uses lecture as a primary instructional tool because it is too boring.

Educating adults is a skill and an art primarily because the environment in which training usually takes place is not really conducive to learning. Most rehabilitation education takes place in hotels or classrooms. Thirty to forty adults are expected to sit for eight-hour stretches, days on end. The number of individuals in the class may prevent some participants from speaking out or asking questions; adults do not want to reveal their ignorance in the company of their peers. The educator is faced with an impossible task of trying to get to know each student during the session and address their learning needs through lectures or answering questions during session breaks. This is difficult for the student and the educator because the time for these exchanges is so brief.

There is no one method of instruction that addresses all of the barriers associated with adult education. Those who provide instruction must use a variety of approaches to communicate information. We are just becoming aware of the benefits of using computers to store and analyze data, present written documents, and talk with one another. Computers are also tools for learning. Our children are light-years ahead of us, as are business and industry, in using computers as an instructional technology. Now it is time for us to incorporate computer training as part of our staff development programs.

The benefits of computer-assisted instruction for adults working in the developmental disabilities field are many:

- People can turn on the computer at any time and begin to learn. This ease of use is important for busy staff who could consider training to be a frivolous endeavor because it takes precious time away from work.
- A computer training product is available when people need it (at time of hire, promotion, performance problems).
- Training costs associated with computers are significantly reduced over conventional training because multiple individuals can learn from the same product and travel for training is unnecessary.
- Trainees can repeat instruction as often as they need in the privacy of their offices or homes. If they have difficulty with a particular section, they can review it without revealing these difficulties to others, such as their peers or managers.
- Since the instruction is offered in a product form, training is consistent. If various staff attend training sessions led by different presenters, they hear several messages. With computer instruction, everyone receives the same material.
- Multi-media, computer assisted instruction offers video, sound, animation, and text. People are attracted to the computer because of the graphics, humor, and sequence of instruction.
- Computer assisted learning is not passive. The majority of computer assisted training products require users to decide what they want to learn and in what sequence. Users are asked questions and must respond to continue. Assessments are found in most products, enabling users to check their work. If problems surface repeatedly, it is a cue for additional instruction or technical assistance in the particular subject area.
- Instructional designers preparing computer assisted instruction are required to present information in a concise format. Every hour of computer assisted training equals two hours of classroom instruction. There is a significant reduction in the fluff and banter of traditional training.

Using a computer for instruction does not replace other forms of adult education. It is an alternative approach that in some circumstances can help facilitate learning more effectively than traditional types of presentations. Based on this premise, the Rehabilitation Research and Training Center at Virginia Commonwealth University has been developing computer assisted training for employment specialists. One project has been completed, a CD-ROM that works on both IBM and Macintosh platforms. *The Power to Be...* discusses consumer-directed career planning processes. Its primary audience is employment specialists. Two more programs are

scheduled for development this year. *Take Charge...* is designed for people with disabilities; it provides suggestions for making informed career choices and offers explicit instructions on how to give direction to service providers. The third program will provide information (programmatic and funding) about governmental agencies that fund employment related services. Last summer, over 60 individuals across the country field-tested these products. The majority found them innovative, easy to use, and grounded in best practice information.

Karen Flippo is Project Director of the Employment Specialist Computer Assisted Training Project in the Rehabilitation Research and Training Center at Virginia Commonwealth University, Richmond. For further information about computer assisted training and VCU products, please contact Karen or Amy Armstrong at (804) 828-1851.

Computer-Based, In-House Training: Kaposia's *SCOUT*

Human services organizations realize the need to provide training to their employees using a variety of media. Kaposia, Inc., a supported employment company in St. Paul, Minnesota, has invested in the development and use of an interactive, computer-based training tool as a vehicle to deliver some aspects of our internal training. The technology, known as SCOUT, has allowed us to capture and retain the collective knowledge of our company so that we may pass it on to current and future employees. We know SCOUT cannot replace in-person training, but we do recognize it as a valuable supplement to a well-rounded system of training.

SCOUT was developed through a joint collaboration between Kaposia and Knowledge Management, Inc., of Bloomington, Minnesota. The basic premise upon which SCOUT was based was the fact that as experienced employees move on, they take their knowledge and expertise with them. Each time someone leaves the company, we spend time re-learning what that person knew and what they did for Kaposia. Another factor was the time it takes for new employees to be oriented to our company. We realized new employees were spending an inordinate amount of time seeking those staff persons who knew information new employees needed to know. Being a supported employment company, the number of occasions when all employees are together in one spot at the same time are rare. Our employees need information at any time, not just the times when the experts are available. SCOUT is a tool that allows employees access to information at any time of day.

SCOUT is based on two "views" of Kaposia. One is our service delivery, and the other is the employee profile of our company. The service delivery view takes the learner through each step in Kaposia's delivery process, from inquiries about who we are and what we do, to a satisfied customer. Along the path are 16 to 18 distinct stops, each corresponding to a different aspect of Kaposia. Some examples include our person-centered assessment process, several parts of job development, and detailed breakdowns of the actual employment process.

The second view revolves around the staff. Each Kaposia employee is entered in SCOUT, including their job title, which team they belong to, and their Myers-Briggs type. Someone scanning SCOUT can discover the extroverts in the company, as well as who the employment specialists are, where they work, and what they do. As we continue the development of SCOUT, we anticipate several more views layered on top of one another to complete the profile of Kaposia.

SCOUT is loaded on two PCs in our office. Once an employee has been trained in its use, the employee is welcome to enter the system and ask away. SCOUT is not yet on our network, but will be in the near future. Once on the network, employees may use the system at will. One does not need to be a computer expert to use SCOUT. A basic familiarity with Windows and the ability to read are the only skills required to successfully use SCOUT.

SCOUT was the brainchild of the president of Knowledge Management, Inc. (KMI). He also happened to be a member of Kaposia's Board of Directors. Together with key employees of Kaposia, he recognized the benefits SCOUT could offer to our organization. Kaposia has been fortunate in that as a test site for this technology, our financial investment is minimal. Kaposia's director of training and a representative of KMI meet regularly to update the system, review current use, and develop new applications for SCOUT.

SCOUT is still in its infancy. There is still a long way to go, additional information to include, and people to train. Kaposia hopes to market the system within the next year. We believe there is value in the processes we have discovered, processes from with other organizations can reap the benefits.

Contributed by Bob Niemiec, Director of Training, with Kaposia, Inc., St. Paul, Minnesota. For further information about SCOUT contact him at (612) 224-6974.

Closing the Distance Gap

by Amy J. Armstrong

It has been predicted that by the end of the 1990s most education (K-12 and higher education, corporate training) will be delivered electronically through technologies such as video programming and computer conferencing (Knowles, 1983; Galagan, 1989; and Bowsher, 1989). Included in this trend is distance delivery of continuing education for personnel in the developmental disabilities field. However, it is important to keep in mind that distance education is not a replacement technology. That is to say, it is not a training panacea. It should be used to augment other training options to create a comprehensive package of staff development. When used in conjunction with other options, it is a powerful approach to personnel training with many benefits.

■ Uplinks and Downlinks: SET NET

One format used in distance education is live satellite training. The technology of satellite training involves shooting a signal up (uplinking) to a satellite orbiting the earth. The signal is then sent back to specific sites on earth (downlinking). Thus, a public school, community college or an extension office with a satellite dish in northern Montana, or eastern Maine, or central Texas can become a downlink site for a production from Richmond, Virginia.

The Supported Employment Training Network (SET NET) at Virginia Commonwealth University was first funded by an experimental and innovative Rehabilitation Services Administration (U.S. Department of Education) grant in 1989. This project was the first in the developmental disabilities field to massively utilize teleconferences for continuing education of rehabilitation and related personnel. Today, many in our field are using teleconferences as a method of personnel development.

Six and a half years after its establishment, SET NET has produced 63 live telecasts that have been viewed by over 20,000 personnel in 48 states and three Canadian provinces. It offers a training calendar each year of five or six two-to-three hour telecasts on topics that have included *Transition to Adulthood: Planning for Quality Life Outcomes; Person Centered Planning: Promoting Customer Choice; The Employment Specialist of the 90s; Social Security Work Incentives: PASS and IRWE;* and *Consumer Assessment and Job Development.* Downlink sites for each telecast range between 40 and 80 nationally, depending upon the topic. Sites include community colleges, cable companies, county extension offices, universities, hospitals, Catholic dioceses, firefighter's associations, public schools, and state agencies. The criteria for selection of sites are simple: downlinks must have a moveable, programmable satellite dish and C-band satellite capability, and must be accessible to all participants. These downlinks represent approximately 800 to 1,200 viewers per telecast. The viewers include employment specialists, job coaches, transition specialists, special education teachers, vocational rehabilitation counselors, community rehabilitation personnel, program managers, family members, and individuals with disabilities. Participant demographics vary depending on the topic being offered.

As with face-to-face instruction, teleconferences in general vary in terms of quality and instructional design. Some are good, some are not. A quality instructional design utilizes a variety of techniques, not just the infamous "talking head". SET NET uses panels, interactive exercises, role plays, video, lectures, question-and-answer periods, audio interviews, and graphics to deliver instruction and maintain the viewer's interest. Another critical component is the 40- to 50-page packet of written support materials that accompanies each telecast; the packets include the day's outline, visuals, handouts and any additional information.

Typically, when producing a teleconference a team approach is used. SET NET is streamlined in that one individual acts as coordinator, instructional designer, and moderator for the productions. The teleconference production director, who is employed at the local public broadcasting company, also develops the graphics and the VCU Media Department shoots and edits any videotapes that are incorporated into the broadcast. The instructional designer relies heavily on the content expertise of the presenters and personal knowledge of the subject. SET NET also utilizes a faculty advisory committee consisting of people with disabilities to ensure a customer-driven approach to content. To identify teleconference topics, SET NET surveys training participants, national consultants and trainers, personnel working in the developmental disabilities field, and the advisory committee.

Agencies and organizations that desire to make SET NET training available in their area follow a series of steps. First, they contact SET NET to register as a participant. Then they locate satellite receiving sites that may be available to them, and make arrangements that can include negotiating a fee for site use. Next, they market the telecast and recruit participants by disseminating information about it to other agencies; SET NET can offer assistance with identifying interested parties in a region. This is followed by identifying a site facilitator who will serve as a synthesizer, facilitator, teacher, and motivator for participants at the downlink site. Then lastly, the individual site must duplicate and distribute the supplemental information packet provided by SET NET for participants.

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■ Benefits and Costs of Satellite Training

Evaluations from participants have indicated that the SET NET approach to training is succeeding. When asked if the information presented will assist in the performance of their jobs, between 75% and 89% of the participants say "yes." When asked whether or not they would attend a teleconference again, typically 78% to 88% indicate "yes." Nationally, there is a void of data comparing the effectiveness of delivery technologies for personnel training. SET NET does not collect such data, either. However, an inference can be made that participants are finding the technology useful as indicated by the increased participation during the seven years of the project, and the high degree of satisfaction indicated on surveys. Participants value exposure to national presenters who might not otherwise be accessible to them. Participants have also indicated that they value the opportunity to network with other agencies and systems, networking that may not otherwise occur.

There are significant benefits to satellite training and other distance education technologies. They include accessibility to increased numbers of trainees in both rural and urban areas; instructional consistency with all trainees receiving quality, up-to-date information that is standardized; and stimulating, interactive multi-dimensional instructional design that includes video, audio, animation, and text.

Costs of presenting training in this manner can be high. Uplink site costs vary, but on the average for a two-hour live production, excluding personnel time, the cost ranges from $8000 to $10,000. This includes presenter travel and honoraria, satellite time (ranging from $180 per hour to $950 per hour), studio time, open-captioning services, video production, and production of written materials. Costs at the downlink sites are much less, ranging from $400 to $1000, with an average of $600. This includes the charge for use of the downlink facility (cable company, school, and so on), which can range from no charge to $400; $40 to $100 for duplication of materials; $300 per downlink for receipt of the satellite signal and packet; and may also include costs for marketing the training. Most downlink sites charge a registration fee of $15 to $30 per participant to offset their costs. By way of comparison, to offer a three-hour, 35-person video conference, the Virginia Department of Information Technology has quoted a projected cost of $2625. A similar face-to-face training would cost $4817, almost twice as much as a teleconference.

Amy J. Armstrong is an Instructor and Distance Education Specialist in the Training Division at Virginia Commonwealth University Rehabilitation Research and Training Center on Supported Employment, Richmond. For further information on SET NET contact her at (804) 828-1851.

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Multi-University Training: The *Media Exchange Program*

by George J. Vesprani

For over 20 years, the Central Conference of University Training Programs in Developmental Disabilities has made use of audio-teleconference and videotape as teaching tools for multi-university instruction. The use of the telephone to deliver educational materials to a distant audience has obvious appeal to those unable, for economic or physical reasons, to travel to the site where the original presentation occurs. This idea had particular appeal to the Central Conference, which is a consortium of 13 university training programs in the Midwest and Canada.

When established in 1969, the Central Conference had among its objectives the following: 1) the establishment of regional collaboration in training, 2) the exploration of regional exchange both of staff and trainees, 3) the development of programming for mutual benefit, and 4) the innovation of new techniques for the accomplishment of mutual training goals. The Central Conference quickly learned that the physical exchange of staff and trainees in order to study at each other's locales was extremely cost-prohibitive. Therefore, a methodology was required that might serve to demonstrate collaborative efforts in training as well as allow for the exchange of training and teaching materials in some effective way.

What began in 1973 with the establishment of the first Media Exchange program has resulted in a series of program efforts that have extended across 22 years. Perhaps most noteworthy about the Media Exchange is that it utilizes low-level technology that is familiar to everyone. In an age of ever-increasing technological sophistication, including satellite-based video teleconference techniques, computer conferencing via e-mail, and so on, the Media Exchange uses visual materials as simple as slides and overhead transparencies along with videotapes and printed materials, adding to that mix the opportunity for direct discussion and interchange via audio teleconferencing. In this way, multiple locations can be woven into an elaborate network of information senders and receivers, allowing for complex interactions and discussions.

Use of the telephone in teaching is not a new enterprise. The University of Wisconsin has had extensive experience with the use of this technique within its own state, as have Illinois and other state educational networks. In this application, however, what is unique is its use across governmental, geographic, and organizational boundaries. Providing a mix of videotape presentation, supplemental print information, conference telephone discussion, and on-site facilitators appears to be the key to success.

Methodology for the Media Exchange is quite simple. Each participating agency receives copies of the videotape presentations and supplemental print materials. On the assigned date of presentation, each site plays back the videotape material to its audience and distributes the supplemental materials. Each on-site facilitator engages their audience in a brief discussion of the program content. Then all sites call into a central telephone bridging network and are connected for teleconference discussion. At this time, the moderator takes over, introducing key participants and facilitating ongoing discussion between the audiences at the multiple sites and the key presenters. Beautifully simple and straight-forward in its design, the Media Exchange model as outlined here easily meets the goal of distance education, reaching out to audiences at geographically distant sites.

Because all of the Central Conference agencies are engaged in professional training of individuals to serve the needs of those with developmental disabilities, the content of each series has been devoted to a specific, often contemporary, concern of training in the area of developmental disabilities. Early on, the moral, ethical, and legal problems faced by individuals with developmental disabilities was chosen as a subtopic; this is an area where no one center was the sole repository of expertise. Beyond that, some of the topics offered over the years have included community-based programming, preparation for independent living, early intervention, emerging approaches to case management services, and assistive technology. The 1995 Media Exchange series focused on health care reform and its impact on individuals with developmental disorders. During that series, two programs were presented in the topic area and 12 of the Central Conference member agencies participated in the program series.

The Media Exchange is a collaborative enterprise between a group of university training programs in developmental disabilities directed at joint teaching efforts using readily available technology. Through this approach, the training efforts of one university can be shared throughout the network in a timely and cost-effective manner. The benefits to each surpass the cost sharing, and result in many secondary benefits such as enhanced collaboration in other areas of functioning and better communication between disciplines across participating universities.

George J. Vesprani is Director of Psychology with the University Affiliated Cincinnati Center for Developmental Disorders, Cincinnati, Ohio. For further information on the Media Exchange contact him at (512) 559-4633

Training Materials for Use in Distance Education

The following resources are taken from the information found in *A Guide to High Quality Direct Service Personnel Training Resources* published by the Center on Residential Services and Community Living, University of Minnesota. While the materials were not specifically evaluated for their suitability as components of distance education, they are presented here as disability-related training materials judged by the guide's authors to be of a high caliber. As such, they may work well as elements of distance-delivered training.

A Guide to High Quality Direct Service Personnel Training Resources (1994) is a 260-page resource guide containing detailed listings and evaluations of 100 high quality training materials from 34 publishers. It can be purchased from the Institute on Community Integration, University of Minnesota, (612) 624-4512.

- **Understanding Aging and Developmental Disabilities: An In-Service Curriculum** (1993). This curriculum is appropriate for training of direct service providers across settings in which support services are provided to people with developmental disabilities who are aging. It is a lecture and discussion format, and addresses community integration/participation, family supports, physical special needs, and services to persons who are elderly. Produced by and available from the Training Program in Aging and Disabilities, University of Rochester Medical Center, Box 671, 601 Elmwood Avenue, Rochester, NY 14642 • (716) 275-2987 (Joyce Goodberlet).
- **An Introduction to Developmental Disabilities** (1993). This is a series of 15 training sessions designed to be taught in a 15-week, 114-hour course at a college or technical institute. It is intended for training of human service personnel working in all types of services for people with developmental disabilities. Each session is three to four hours long, with a four-hour practicum. Titles in the series are *Assessment and Planning, Communication, Teaching Skills, Positive Behavior Change, Health,* and *Values and Visions.* The series utilizes discussion, lecture, videotapes, exercises, and a practicum. Produced by and available from Kansas University Affiliated Program at Parsons, P.O. Box 738, Parsons, KS 67357 • (316) 421-6550, ext. 1859 (Lorie Robertson).
- **Project Coach Outreach Series (1992).** This series of modules is designed for training direct service staff providing support to young children with various physical and developmental disabilities in educational and other settings. It makes use of lecture, discussion, overhead transparencies, and videotapes. Titles in the series include *Working with Families: A Systems Approach to Home Visits, An Introduction to Cerebral Palsy, Overview of Spina Bifida, Promoting Language,* and *Understanding Seizure Disorders.* Produced by and available from the Institute for Disability Studies, University of Southern Mississippi, Project Coach Outreach, SS Box 5163, Hattiesburg, MS 39406-5163 • (601) 266-5163 (Gwen Downey).
- **Choice-Making: A Curriculum for Direct Care Staff and Those Who Support Individuals with Mental Retardation** (1994). This eight-module curriculum is designed for direct support staff in residential and supported employment programs, as well as case managers, advocates, and family members. It advances the idea of teaching and supporting choice-making by people with mental retardation, and addresses practical issues surrounding individual capabilities and the implications of choice-making for both the individual and those providing support. Developed by and available from the University Affiliated Cincinnati Center for Developmental Disorders, 3333 Burnet Avenue, Cincinnati, OH 45229-3039 • (513) 559-4639 (Tom Gannon).
- **Minnesota Governor's Council on Developmental Disabilities Special Education Resources** (1992). This five-module series is designed to be used in training direct service providers and beginning supervisory staff responsible for providing direct service to individuals with developmental disabilities. It incorporates classroom instruction and videotapes in presenting the five topics: *Technological Adaptations to Increase Independence, Positive Learning: An Alternative to Behavior Management, How to Develop Individual Plans, Communication for People with Severe Disabilities,* and *How to Position People with Severe Disabilities.* Produced by the Governor's Council, and available from Minnesota Educational Services, 700 W. County Road B2, Little Canada, MN 55112 • (612) 483-4442 (Paul Sehlen).
- **Paraprofessional Training in Working with Individuals with Disabilities** (1995). This training curriculum consists of seven modules for preservice/inservice training of paraprofessionals across settings. Each module is intended to be delivered in a classroom setting, and requires approximately eight to 10 two-hour sessions per module. This series has been used successfully in distance delivery of training (see story on page 7 of this *IMPACT*). While containing some Minnesota references, is applicable elsewhere. Available August 1995. Produced by and available from Institute on Community Integration, University of Minnesota, 109 Pattee Hall, 150 Pillsbury Dr. SE, Minneapolis, MN 55455 • (612) 624-4512.

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Carol is an Information Management major and a single parent. She also has a physical disability. "This is the best thing I've ever done! It's extremely hard to travel from place to place in a wheelchair. By staying at home for school, I have no barriers to deal with - and I don't have to go out in bad weather. That makes New Pathways very convenient. I can participate with my classmates on computer after having time to think over what I'm learning in the classes. My thoughts are clearer. I ordinarily wouldn't respond in a regular class, but with the New Pathways format, I am comfortable participating with others."

■ Occupational Therapy Department

At this time, occupational therapy courses are not offered in the New Pathways program. However, groundwork has been laid for future collaborative projects between the Occupational Therapy Department and the New Pathways program. Occupational therapy faculty have long recognized the importance of technology in the educational process. In fact, the occupational therapy major was one of the first majors at the college to be certified as meeting the college's computer literacy and proficiency requirement. Occupational therapy students acquire skills in word processing, spreadsheets, databases, electronic mail, computer conferencing, and adaptive technology through required occupational therapy courses. These skills are the foundations for success in many distance education courses.

Several occupational therapy faculty have received funding in recent years to pilot distant learning technologies with current Weekend College occupational therapy students. A number of these technologies have been successfully integrated into aspects of the occupational therapy curriculum. Computer conferencing has been used by students working on group assignments. Electronic mail facilitates communication among students and faculty; this technology is especially useful because students are only on campus every other weekend. Students can now conduct library searches from their home computer using a modem. Faculty have also developed videotapes and guided learning activities to replace and/or supplement classroom activities.

The Occupational Therapy Department is eager to further expand its use of distance learning technologies to improve the accessibility and quality of its educational programs. It is hoped that such technologies will meet the 21st century needs of professionals and paraprofessionals serving persons with developmental disabilities.

Julie Bass Haugen is Director of the Master of Arts program in Occupational Therapy, and Mary Beth King is Marketing and Recruitment Coordinator with the New Pathways Program, both at the College of St. Catherine, St. Paul, Minnesota. For further information contact Julie at (612) 690-6024.

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describe a series of pathways from which data, television signals, and other forms of information can travel. Many of these pathways already exist (i.e., telephone lines, cable television systems, computer links). To make this a superhighway, plans are to link these separate paths into a super network. The technology breakthroughs taking place today are the result of combining systems, signals, hardware, and networks. This brings together telephones with cables, wireless technology, fiber optics, microwaves, and satellites with home computers and TVs. This multi-system approach capitalizes on the advantages of each system and circumvents its disadvantages. The flexibility needed to apply the principles of instructional technology is combined with the advantages of interactive and individualized learning systems made available through a mass media network. It is like creating a television system with 500 channels. Each of these channels provides opportunities through which training can flow. At this point, it is hard to even envision the options that will be available, let alone how they can be utilized to provide training programs.

As we consider the past and plan for the future, certain factors stand out that should be considered. First, more sophisticated learning and technology will cost more. This cost will have to be balanced by more effective instruction and reaching a larger audience. Second, we will have to fight for the development and up-front resources, as well as the desirable time frames for the instruction we want to provide. The more effective the technology is, the more competition there will be to use it. Finally, the best preparation for any of us to make to reap the benefits of distance learning in the future is effective utilization of the teaching technology that we have today. Unless we have learned to utilize the well-known principles of instruction and enhance the training we provide with graphics and editing using the technology now at hand, we will be ill-prepared to employ distance education technology of the future. It is unlikely that new technology, even super-information-highway technology, will be a panacea to address our training needs, and it will only be a supplement if we can effectively use the technology and employ sound principles of instruction.

Marvin Fifield is Director of the Center for Persons with Disabilities (Utah University Affiliated Program), Utah State University, Logan. He may be reached at (801) 797-1981.

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Distance Education, continued from page 1

that can benefit from the use of information technology including distance education. For example, the research/teaching universities of the United States are unique in the world in the specialization and depth of expertise of individuals who work within these organizations. In the fields that relate to developmental disabilities, this usually means that these universities employ a spectrum of specialists not found elsewhere in the state or region in which they are located. This resource, while available and open to providers of services to people with disabilities, as well as individuals with disabilities and their families, is in a real sense limited to those who can access the resource by coming onto campus. It is in courses, lectures, face-to-face or other real time verbal discussion, and/or reading the articles describing the work of the teacher/researcher that their expertise is disseminated. Similarly, other post-secondary institutions, such as technical schools and two- and four-year colleges have resources and expertise that are needed and desired by individuals who are prohibited by time and distance from becoming on-campus students.

Perhaps distance education technology can provide the answer to the need to "open the system" so that the body of knowledge available from these post-secondary organizations can be made accessible to all persons with an interest in it and/or need to know. The technology exists to deliver an array of information and provide interactive links between individuals and the instructor. The issues of the final years at the close of this century are how do we encourage use of this technology, and what can motivate content-specific experts to learn how to reformat all of their expertise and knowledge to utilize the power of technology for enhanced human learning? These are the over-arching issues of this moment as we discuss the role of post-secondary institutions in disseminating the body of knowledge collectively held by their faculty and staff to improve the lives of people with developmental disabilities.

Changes in best practice strategies and recent findings from research activities need to be shared with personnel working with individuals with disabilities. Reaching this diverse group is a huge challenge due to the numbers of individuals already working in the disabilities field, the variety of education and experience they bring to their jobs, and the limited access they have to training opportunities. For example, in 1993 there were an estimated 158,268 full-time equivalent direct service staff members nationwide working in community residential settings serving 15 or fewer people (Larson, 1995). A survey of the 50 chief state school officers, conducted by the National Resource Center for Paraprofessionals in Education and Related Services (NRC), suggests that there are over 400,000 paraprofessionals working in general, compensatory, and special education programs administered by local education agencies nationwide. More than 200,000 of these are employed in special education programs alone (Pickett, 1993). With the changes noted earlier, these numbers will continue to grow. Many practitioners live and work far from research universities and other post-secondary environments, and must count on on-the-job training and other strategies to improve their skills and abilities. In fact, the Minnesota Paraprofessional Survey (Lorenz, 1994) found that nearly 60% of that state's paraprofessionals rely on on-the-job training to increase their knowledge and improve their skills. Training via distance education strategies can offer these service providers up-to-date information and approaches from some of the nation's leading experts in the developmental disabilities field, and can make the training available during times and in locations that are accessible. In addition, higher education can offer credit and degree granting programs through distance education that can assist staff in meeting their career goals, thus improving the retention of highly qualified personnel.

Improving access to consistent training to enhance knowledge and skills is critical to the ultimate goal of providing quality services to individuals with disabilities. Post-secondary institutions have been using distance education, in the general sense of the word, for decades in the form of correspondence courses using radio and television broadcasts and print materials. What has changed in the past decade and continues to change is the technology that allows for courses to be delivered to individuals without regard to their location and the time of day. Even more important, course and workshop delivery technology allow the individual to interact with the presenter and other learners simultaneously across sites as never before, enhancing the learning experience. The challenge for distance education in serving the needs of personnel in the developmental disabilities field is how to infuse the expertise of the specialists within post-secondary and other training environments into the powerful teaching learning tools afforded by multi-media technology. It is this synthesis of technology and content expertise that will optimize the use of distance education for the benefit of individuals with developmental disabilities.

Teri Wallace is Assistant Director of the Institute on Community Integration, and Dick Weatherman is Professor in the Department of Educational Policy and Administration, both at the University of Minnesota, Minneapolis. Teri can be reached at (612) 626-7220, and Dick at (612) 626-8394.

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Inquiries about *IMPACT* can be directed to:

Institute on Community Integration
University of Minnesota
109 Pattee Hall, 150 Pillsbury Drive SE,
Minneapolis, MN 55455
(612) 624-4512.

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